

CLAIMS

1. Switching arrangement for transporting data packets that comprise data packet destination information and a payload, said data packets heading via one or more input ports of a switching device towards one or more output ports thereof, said switching
5 device being able to route said arriving data packets according to said data packet destination information to at least one dedicated of said output ports, whereby the total of all input ports is divided into subsets of input ports, each subset comprising at least one said input port, said switching arrangement comprising

- at each input port an input buffer with at least as many input queues as said switching
10 arrangement has output ports, said input queues serving for sorting said arriving data packets according to their dedicated at least one output port , and

- an input controller for each input port, serving for controlling the order of multiplexing said data packets from said input queues to said switching device,

- for each subset of said input ports in said switching device a separate output buffer for
15 storing at addresses therein at least said payload of each said data packet arriving at said input port, and

- at least one set of as many output queues as said switching arrangement has output ports, for storing therein, sorted according to said data packet destination information, at least said address of each said payload stored in said output buffer,

20 - whereby said stored payload is deliverable to its dedicated at least one output port under use of said stored addresses.

2. Switching arrangement according to claim 1, characterized in that an output-queue threshold comparator is provided for signaling to the input buffers if a threshold value of occupied places in the total of all output queues pertaining to one common output
25 port has been exceeded.

3. Switching arrangement according to claim 2, characterized in that upon a signal from the threshold comparator that the threshold value of occupied places in the total of all

output queues pertaining to one common output port has been exceeded, said input buffers are designed such that only the input queue which corresponds to said common output port is prevented from delivering its data packets to said common output port.

5 4. Switching arrangement according to claim 1, characterized in that for each output buffer an output buffer backpressure generator is provided for signaling to the input buffers of the subset of input ports corresponding to the output buffer that a threshold value of occupied addresses in the output buffer has been exceeded.

10 5. Switching arrangement according to claim 1, further comprising at least one address manager for managing the use of said addresses of said output buffers, or output buffer, and at least one output queue router for entering said addresses at which said data packets are stored in said output buffers or output buffer, into said output queues.

15 6. Switching arrangement according to claim 5, characterized in that for a multicast data packet the address thereof is enterable as an entry in each of the output queues for the output ports this multicast data packet is intended to reach and that said address is only releasable by the address manager for use for another data packet, when all entries of said multicast data packet have been successfully used for delivering said multicast data packet to its designated output ports.

20 7. Switching arrangement according to claim 1, characterized in that for data packets with different handling-priorities, for each class of priority and for each output port a separate input queue is provided in the input buffer.

8. Switching arrangement according to claim 1, characterized in that the output queues provide in total more queuing places for the addresses than the corresponding output buffers have, respectively corresponding output buffer has addresses.

25 9. Switching arrangement according to claim 1, comprising for delivering at least said payload from said output buffers to said output ports a common output router, connecting all output buffers with all output ports.

10. Switching arrangement according to claim 1, comprising a demultiplexer for making for each of said arriving data packets an entry into those of said input queues, which

are identified in said packet destination information of the corresponding data packet, whereby each said input controller is designed to allow simultaneous transmission of those data packets whose entries are located in different of said input queues and who have identical payload.

5 11. Switching arrangement according to claim 10, characterized in that each said entry comprises at least the payload of the corresponding data packet or a pointer to a memory cell wherein at least the payload of the corresponding data packet is stored, said memory cell preferably being located in a common input buffer.

10 12. Switching arrangement according to claim 11, characterized in that for the case said data packet being a multicast data packet, the demultiplexer is designed to make several entries in said input queues and only one entry of the payload thereof in a said memory cell.

15 13. Switching method for data packets heading via one or more input ports of a switching device towards one or more output ports thereof, the total of all input ports being divided into subsets of input ports, each subset comprising at least one said input port, said method comprising the steps of

- 20 - sorting said data packets according to their dedicated at least one output port, at each input port into input queues of an input buffer which has at least as many input queues as said switching device has output ports,
- multiplexing said data packets from said input queues to said switching device,
- storing at addresses in a separate output buffer which exists per subset of said input ports in said switching device at least said payload of each said data packet arriving at said input port,
- 25 - storing at least said address of each said payload stored in said output buffer in output queues which exist at least once in said switching device, sorted according to said data packet destination information,

- delivering said stored payload to its dedicated at least one output port under use of said stored addresses.

14. Switching method according to claim 13, comprising the step of signaling to the input buffers if a threshold value of occupied places in the total of all output queues
5 pertaining to one common output port has been exceeded.

15. Switching method according to claim 13, characterized in that upon a signal that the threshold value of occupied places in the total of all output queues pertaining to one common output port has been exceeded, in said input buffers only the input queue which corresponds to said common output port is prevented from delivering its data
10 packets to said common output port until the number of occupied places has decreased.

16. Switching method according to claim 13, comprising the step of signaling to the input buffers of a said subset of input ports that a threshold value of occupied addresses in the corresponding output buffer has been exceeded.
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